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SICKNESS AMONG MALE INDUSTRIAL EMPLOYEES DURING THE SECOND QUARTER AND THE FIRST HALF OF 1935 [1]

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One has to go back to the fourth quarter of 1932 to find an increase in the frequency of sickness and nonindustrial accidents as large as that which occurred in the second quarter of 1935 in comparison with the corresponding quarter of the preceding year. Cases causing disability for more than 1 week occurred 17 percent oftener than in the second quarter of 1934. After 2 years of below-average sickness incidence rates, the frequency of disability in the second quarter of 1935 increased to a figure approximately the same as the average rate for this period of the 5 preceding years.

In the first 3 months of 1935 only a slight increase in sickness frequency occurred over that recorded for the same months of 1934. The fairly sharp rise in the second 3 months of 1935 brought the rate for the half year to a level 13 percent above the corresponding rate for the same period of 1934.

These findings emerged from an analysis of reports from a group of 33 corporations having sick-benefit organizations covering approximately 158,000 male industrial workers in the periods under consideration.

There was very little change in the frequency of nonindustrial accidents in the second quarter and in the first half of 1935 as compared with the corresponding periods of the preceding year. The increase was due to a greater frequency of cases of disabling sickness as distinguished from injuries of nonindustrial origin.

In the second quarter of 1935 the frequency of disability from respiratory diseases exceeded the average rate for such illnesses during the 5 years 1930 to 1934, inclusive. The average rate was exceeded in each of the respiratory-disease categories shown in table 1 with the exception of respiratory tuberculosis, which occurred at average frequency in the second quarter of 1935. For the 6 months as a whole, each numerically important respiratory disease,

[1] The report for the first quarter of 1935 was published in the Public Health Reports for Aug. 23, 1935, vol. 50, no. 34, pp. 1125-1127.

tuberculosis included, occurred oftener than in the first half of 1934. Influenza, which was recorded at less than average frequency in the first 3 months of 1935, was found to have greater than average incidence in the second quarter among the industrial employees covered by the reporting organizations. The influenza-mortality rate likewise increased sharply, but the mortality from this disease in 1935 was considerably below the average for influenza during the winter and spring seasons.[2] This result suggests that the influenza-fatality rate (percentage of cases terminating fatally) may have been unusually low during the first half of 1935. The rise in the influenza-morbidity rate was accompanied by an increase in the frequency of pneumonia among the industrial workers under consideration. The mortality from pneumonia, however, as reported by the Metropolitan Life Insurance Co., differed little from that in the first half of 1934.[3]

For nonrespiratory diseases as a whole the rate was 10 percent higher in the second quarter, and 3 percent higher in the first half than in the corresponding periods of the preceding year. There was practically no change in the frequency of digestive diseases. The rise in nonrespiratory diseases was due to a combination of small increases in the rate for the rheumatic group of diseases, neurasthenia, diseases of the heart and arteries, and diseases of the genito-urinary system and annexa. The rate for diseases of the skin remained virtually unchanged from the low incidence to which this group of diseases has declined during the past few years.

Although the sickness experience of the group of male industrial workers under consideration was not so favorable as in the corresponding periods of 1934, no disease group, with the exception of epidemic and endemic diseases, occurred at a rate which was appreciably above its 5-year average. The downward trend in sickness frequency which has been manifested during the past 5 or 6 years, however, may have reached its nadir, at least for the time being. Progressive increase in the proportion of workers employed on a full-time basis may result in slightly higher sickness rates on account of increased exposure to occupational health hazards. That a relationship exists between the health of industrial workers and the rate of business activity seems apparent from the changes which have occurred in sickness frequency among industrial employees from 1921 to date.

[2] Statistical Bulletin, Metropolitan Life Insurance Co., vol. 16, no. 7, July 1935, p. 5.
[3] Ibid., p. 7.

TABLE 1.—*Frequency of disability lasting 8 calendar days or longer in the second quarter of 1935, compared with the same quarter of preceding years, and in the first half of 1935 as compared with the corresponding period of 1934. (Male morbidity experience of industrial companies which reported their cases to the U. S. Public Health Service)*[1]

Diseases and disease groups which caused disability. (Numbers in parentheses are disease title numbers from the International List of the Causes of Death, fourth revision, Paris, 1929)	Annual number of disabilities per 1,000 men				
	Second quarter of—			First half of—	
	1935	1934	Five years, 1930–34	1935	1934
Sickness and nonindustrial injuries [2]	85.2	72.8	84.9	92.9	82.4
Nonindustrial injuries	9.5	9.6	11.1	9.9	10.6
Sickness [2]	75.7	63.2	73.8	83.0	71.8
Respiratory diseases	29.1	20.9	25.4	37.9	28.2
Bronchitis, acute and chronic (106)	3.8	2.5	3.0	4.2	3.6
Diseases of the pharynx and tonsils (115a)	6.5	5.2	5.6	5.8	4.8
Influenza, grippe (11)	11.1	7.2	9.9	19.0	12.2
Pneumonia, all forms (107–109)	2.4	1.9	2.0	3.1	2.4
Tuberculosis of the respiratory system (23)	1.1	.8	1.1	1.0	.8
Other respiratory diseases (104, 105, 110–114)	4.2	3.3	3.8	4.8	4.4
Nonrespiratory diseases	46.6	42.3	48.4	45.1	43.6
Diseases of the stomach, cancer excepted (117–118)	3.1	3.2	3.9	3.3	3.3
Diarrhea and enteritis (120)	.8	1.1	1.1	.9	1.0
Appendicitis (121)	4.2	4.1	4.0	3.9	4.0
Hernia (122a)	1.4	1.6	1.6	1.4	1.5
Other digestive diseases (115b, 116, 122b–129)	3.0	2.7	3.0	3.0	2.8
Rheumatic group, total	9.9	8.9	10.9	9.8	9.4
Rheumatism, acute and chronic (56, 57)	4.9	4.3	5.8	4.6	4.6
Diseases of the organs of locomotion (156b)	2.5	2.8	3.1	2.7	2.9
Neuralgia, neuritis, sciatica (87a)	2.5	1.8	2.0	2.5	1.9
Neurasthenia and the like (part of 87b)	1.4	1.1	1.3	1.1	.8
Other diseases of the nervous system (78–85, part of 87b)	1.2	1.4	1.3	1.2	1.5
Diseases of the heart and arteries, and nephritis (90–99, 102, 130–132)	3.7	3.2	4.1	3.8	3.5
Other genito-urinary diseases (133–138)	2.9	2.3	2.4	2.7	2.5
Diseases of the skin (151–153)	2.3	2.2	2.8	2.3	2.3
Epidemic and endemic diseases, except influenza (1–10, 12–18, 33, 37, 38, part of 39 and 44)	4.0	2.5	2.8	3.3	3.2
Ill-defined and unknown causes (200)	2.1	1.7	1.8	2.0	1.8
All other diseases (19–22, 24–32, part of 39 and 44, 40–43, 45–55, 58–77, 88, 89, 100, 101, 103, 154–156a, 157, 162)	6.6	6.3	7.4	6.4	6.0
Average number of males covered in the record	158,959	158,875	150,777	158,310	152,302
Number of companies included	33	33	36	33	33

[1] In 1934 and 1935 the same companies are included The rates for the second quarter of the years 1930–34 include 19 of these companies which employed an average of 120,666 men during these months, or 80 percent of the 150,777 men representing the sample population for the 5 years.

[2] Exclusive of disability from the venereal diseases and a few numerically unimportant causes of disability.

The comparison of rates in 1935 with those in 1934 is based on the reports of identical companies, and the 5-year averages are based on the experience of almost the same employee groups. The number of companies included may be insufficient to afford an adequate sample of the sickness experience of industrial workers in the country as a whole, although the reporting companies employ persons in nearly all parts of the country. A majority of the workers included in the record are located north of the Ohio River and east of the Mississippi

River. The illnesses reported are those for which sick benefits are paid (for cases causing disability lasting longer than 1 week) from funds to which payments are made by the employee, by the employer, or by both.

PHYSICAL CONDITION AND UNEMPLOYMENT[1]

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Over a period of 3 years the Employment Stabilization Research Institute of the University of Minnesota conducted physical, psychological, and sociological examinations of large numbers of employed and unemployed persons in Minneapolis, St. Paul, and Duluth. Several published studies have presented analyses of personality profiles, employment records, skills, and mental capacities of these groups.[2]

Although the physical condition of these unemployed individuals was rarely, if ever, considered when they lost their jobs, the great prevalence of physical defects among them led us to raise the question as to a possible relationship between physical handicaps and unemployment. Such a relationship, if existent, might be because physical handicaps reduce efficiency and thereby contribute to unemployment; or because lack of employment predisposes to certain physical defects and makes it impossible to have others corrected; or because the individual who neglects physical defects is likely to be careless and inefficient in other things.

In order to investigate a possible relationship between physical condition and employment status the physical examination records of individuals in the following four broad occupational groups were analyzed: Professional workers and business officials, clerical workers, skilled workers, and semiskilled workers. Each of these groups was then further divided into three subgroups according to employment status, viz, those who were unemployed early in the depression, i. e., before January 1, 1931; those who became unemployed late in the depression, i. e., after January 1, 1931; and those who were employed at the time of the examination. The first group probably could be considered more or less chronically unemployed. The details of the examination procedure, the record forms used, and similar matters have been discussed in an earlier publication.[3]

[1] From the Employment Stabilization Research Institute and the Department of Preventive Medicine and Public Health, University of Minnesota, Minneapolis, Minn.

[2] Bulletins of the Employment Stabilization Research Institute, University of Minnesota Press, Minneapolis, Minn., 1932-34.

[3] Hansen, Alvin, Trabue, Warren R., and Diehl, Harold S.: The Duluth casual labor group. Bulletins of the Employment Stabilization Research Institute, vol. 1, no. 3, 1932.

Each physical examination record was then classified for the purpose of this study as showing (1) physical defects likely to reduce efficiency, (2) physical defects which might impair efficiency, or (3) no physical defects, handicaps, or diseases likely to affect efficiency. These classifications represent a physician's opinion as to the possible or probable influence of each individual's physical condition upon efficiency in his or her particular occupation. The physician who made these classifications had no information concerning the employment status of the individuals whose records he was classifying. Table 2 presents the frequencies with which these several physical classifications occur among the early-depression unemployed, the late-depression unemployed, and the employed groups of each occupational class. First, the classifications for all ages taken together were tabulated; and then, because age may affect employment, similar tabulations were made for the age group 25 to 44 years separately.

The relationship of individual physical defects and diseases to employment status is shown by table 3, which gives the frequencies in percentages of the various physical defects among the early-depression unemployed, the late-depression unemployed, and the employed groups in each occupational class. The numbers of individuals in the various groups and subgroups are shown in table 2.

AGE

The one consistent age difference between these several employment groups, small and statistically insignificant though it is in most cases, is that the late-depression unemployed group is slightly younger than either the early-depression unemployed or the employed groups (table 1). This suggests that the first reduction in employment was not based upon a consideration in which age would be involved, but that later in the depression there was a tendency to drop the younger employees, possibly because they had less financial and family responsibility than the older ones. Among the skilled workmen and among both men and women of the so-called professional and business official class the early-depression unemployed groups show a greater average age than either the late-depression unemployed or the employed groups in these occupational classes. However, this is associated with a greater average age for these occupational groups as a whole than for clerical and semiskilled workers.

HEIGHT AND WEIGHT

There are no significant differences in the heights of the employment groups of either men or women in any of the occupational classifications (table 1).

TABLE 1.—*Age, height, and weight*

Occupational group[1]	Men			Women		
	Early-depression unemployed	Late-depression unemployed	Employed	Early-depression unemployed	Late-depression unemployed	Employed
Mean age and probable error in years:[2]						
Professional and business	40.6±1.4	35.8±0.9	37.6±0.6	36.6±1.4	30.7±0.8	30.1±0.9
Clerical	32.7± .7	29.7± .5	33.5± .6	29.6± .6	27.2± .5	28.3± .4
Skilled	42.0± .6	38.5± .5	39.5± .8			
Semiskilled	33.1± .8	30.3± .6	35.5±1.0			
Mean height and probable error in inches:[3]						
Professional and business	68.6± .3	69.0± .2	69.2± .2	64.6± .5	64.8± .5	64.3± .3
Clerical	68.9± .1	69.0± .3	68.9± .1	65.0± .2	65.0± .2	65.5± .1
Skilled	68.2± .1	68.4± .1	68.5± .2			
Semiskilled	68.5± .2	68.9± .2	69.2± .3			
Mean weight and probable error in pounds:[3]						
Professional and business	154.9±2.6	154.9±1.6	164.6±1.6	134.0±3.5	133.7±3.4	130.8±3.4
Clerical	145.6±1.0	150.7±1.2	154.6±1.1	130.0±2.1	127.2±1.5	128.1± .9
Skilled	160.3±1.2	158.8±1.2	163.5±1.6			
Semiskilled	151.4±1.4	155.0±1.3	156.5±2.2			

[1] For number of cases in the various groups see table 2.
[2] Age in years to nearest birthday.
[3] Measurements include shoes and ordinary clothing.

The average weight of employed men is greater than the average weight of early-depression unemployed or late-depression unemployed men in each occupational classification, a difference which probably is a result of unemployment. This is in marked contrast to the situation with the women, among whom there is no significant difference in the average weights of the several employment groups.

PHYSICAL CLASSIFICATIONS

The proportion of individuals with physical defects considered likely to reduce efficiency is from two to four times as great among the early-depression unemployed groups, for all ages combined, as among the employed groups in the same occupational classifications. This frequency of physical handicaps is definitely and consistently greater among the early-depression unemployed than among either of the other employment groups. This holds true for each occupational class, for both men and women, and for the 25- to 44-year-old group as well as for all ages combined. Likewise, the proportion of individuals with no physical defects considered likely to affect efficiency is consistently lowest among these same early-depression unemployed groups (table 2).

TABLE 2.—*Physical classifications*

ALL AGES

Occupational group	Men			Women		
	Early-depression unemployed	Late-depression unemployed	Employed	Early-depression unemployed	Late-depression unemployed	Employed
Number of cases:						
Professional and business	35	71	91	19	19	37
Clerical	144	131	149	69	85	269
Skilled	174	265	98			
Semiskilled	92	112	61			
Physical defects likely to reduce efficiency:						
Professional and business—percent	25.7	11.3	9.9	26.3	5.3	10.8
Clerical—do	24.3	11.4	12.7	21.7	10.6	9.3
Skilled—do	25.9	22.3	10.4			
Semiskilled—do	14.1	6.2	3.3			
Physical defects which might reduce efficiency:						
Professional and business—percent	45.7	39.4	39.5	36.8	36.8	32.4
Clerical—do	29.9	25.2	21.5	46.4	34.1	28.6
Skilled—do	36.7	30.0	37.5			
Semiskilled—do	27.2	27.7	26.2			
No physical defects likely to affect efficiency:						
Professional and business—percent	28.6	49.3	50.6	36.8	57.9	56.8
Clerical—do	45.8	63.4	65.8	31.9	55.3	62.1
Skilled—do	37.4	47.7	52.1			
Semiskilled—do	58.7	66.1	70.5			

AGES 25 TO 44 YEARS, INCLUSIVE

Number of cases:						
Professional and business	19	48	67	13	16	25
Clerical	48	70	106	40	46	135
Skilled	64	89	69			
Semiskilled	52	60	39			
Physical defects likely to reduce efficiency:						
Professional and business—percent	21.0	6.2	9.0	30.8	6.3	16.0
Clerical—do	25.0	14.3	10.4	22.5	10.9	11.1
Skilled—do	19.1	19.6	4.4			
Semiskilled—do	11.5	5.0	0.0			
Physical defects which might reduce efficiency:						
Professional and business—percent	42.1	41.7	34.3	38.5	43.8	36.0
Clerical—do	29.2	18.6	19.8	50.0	39.1	30.4
Skilled—do	33.7	28.4	36.2			
Semiskilled—do	21.2	30.0	28.2			
No physical defects likely to affect efficiency:						
Professional and business—percent	36.9	52.1	56.7	30.8	50.0	48.0
Clerical—do	45.8	67.1	69.8	27.5	50.0	58.5
Skilled—do	47.2	54.0	59.4			
Semiskilled—do	67.3	65.0	71.8			

The late-depression unemployed groups show frequencies of physical handicaps intermediate between the early-depression unemployed and the employed groups; but the physical classifications of the late-depression unemployed group are much more nearly like the classifications of the employed groups than those of the early-depression unemployed. This suggests that late in the depression factors other than ability were given first consideration in the selection of persons to be discharged.

SPECIFIC PHYSICAL DEFECTS AND DISEASES

The frequencies of the more common physical defects reported are shown in table 3. From this table it appears that in practically every case in which there is a significant difference between the groups, the prevalence of defects is greatest in the early-depression unemployed groups and least in the employed groups.

TABLE 3.—*Physical findings*

Occupational group [1]	Men			Women		
	Early-depression unemployed	Late-depression unemployed	Employed	Early-depression unemployed	Late-depression unemployed	Employed
Underweight, 10 percent or more: [2]	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Professional and business	[3] 28.6	[3] 23.0	[3] 9.0	37.1	[3] 33.3	[3] 38.9
Clerical	[3] 32.8	[3] 20.0	[3] 19.0	[3] 37.5	38.1	[3] 32.2
Skilled	[3] 19.9	[3] 17.2	[3] 15.3			
Semiskilled	[3] 18.8	17.5	16.1			
Overweight, 20 percent or more: [2]						
Professional and business	[3] 3.6	[3] 7.7	[3] 7.9	15.8	[3] 5.6	[3] 8.1
Clerical	[3] 1.5	[3] 3.1	4.8	[3] 15.6	[3] 6.0	[3] 6.5
Skilled	[3] 12.1	[3] 9.8	[3] 11.3			
Semiskilled	[3] 5.9	7.0	11.3			
Visual defects, total (20/30 or worse in one or both eyes uncorrected or corrected to): [4]						
Professional and business	60.0	27.8	28.6	47.7	5.3	13.5
Clerical	49.3	32.1	27.7	58.8	25.0	20.1
Skilled	49.4	42.2	35.5			
Semiskilled	39.1	29.8	19.4			
Visual defects, high grade (20/40 or worse in one or both eyes uncorrected or corrected to): [4]						
Professional and business	22.9	15.5	13.2	5.3	5.3	2.7
Clerical	25.0	16.0	12.2	22.1	10.7	11.2
Skilled	22.7	19.8	23.9			
Semiskilled	13.0	15.8	11.3			
Color blindness: [5]						
Professional and business	2.9	4.2	6.6	0	0	0
Clerical	3.5	8.4	7.4	1.5	0	0.4
Skilled	5.8	4.3	7.6			
Semiskilled	2.2	3.5	11.3			
Hearing loss, total (10 percent or more in one or both ears): [6]						
Professional and business	25.8	5.5	3.3	5.3	5.3	5.4
Clerical	10.4	6.1	1.4	10.3	2.4	.7
Skilled	21.5	14.3	7.6			
Semiskilled	9.8	7.9	6.5			
Hearing loss, high grade (20 percent or more in one ear, 10 percent or more in other ear): [6]						
Professional and business	5.7	0	[illegible]2	5.3	5.3	2.7
Clerical	3.5	1.5	0	1.5	0	.4
Skilled	7.6	3.5	0			
Semiskilled	3.3	.9	1.6			
Cerumen, impacted:						
Professional and business	5.7	8.4	6.6	10.5	5.3	8.1
Clerical	9.7	9.2	10.8	10.3	6.0	6.3
Skilled	10.5	13.2	16.1			
Semiskilled	7.6	8.8	21.0			
Ear defects, other: [7]						
Professional and business	2.7	6.9	0	0	5.3	2.7
Clerical	2.1	3.8	5.4	1.5	1.2	2.2
Skilled	2.3	2.7	6.5			
Semiskilled	2.2	.9	3.2			
Dental caries, total: [8]						
Professional and business	[3] 36.4	[3] 23.5	[3] 11.9	[3] 13.3	[3] 11.1	[3] 6.1
Clerical	[3] 44.9	[3] 26.4	[3] 17.7	[3] 14.8	[3] 4.0	[3] 6.9
Skilled	[3] 52.9	[3] 40.4	[3] 25.9			
Semiskilled	[3] 43.1	[3] 30.4	[3] 39.6			

See footnotes at end of table.

TABLE 3.—*Physical findings*—Continued

Occupational group [1]	Men			Women		
	Early-depression unemployed	Late-depression unemployed	Employed	Early-depression unemployed	Late-depression unemployed	Employed
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Dental caries of advanced grade: [8]						
Professional and business	0	[3] 3.9	[3] 1.5	0	0	0
Clerical	[3] 9.3	[3] 2.8	[3] 1.5	[3] 1.6	[3] 1.3	0
Skilled	[3] 13.6	[3] 7.5	[3] 5.2			
Semiskilled	[3] 6.2	[3] 6.5	[3] 5.7			
Dental plates:						
Professional and business	8.6	5.6	0	5.3	0	0
Clerical	3.5	3.1	4.1	1.5	0	1.1
Skilled	9.9	4.3	14.0			
Semiskilled	4.3	0	3.2			
Gingivitis and pyorrhea:						
Professional and business	[3] 23.8	[3] 12.0	[3] 14.7	[3] 13.3	0	5.4
Clerical	[3] 23.9	[3] 13.6	[3] 10.1	[3] 5.0	[3] 5.5	[3] 3.4
Skilled	[3] 29.6	[3] 24.6	[3] 23.4			
Semiskilled	[3] 27.7	[3] 17.6	[3] 18.9			
Nasal obstruction: [9]						
Professional and business	8.6	18.3	11.0	15.8	15.8	10.8
Clerical	14.6	16.0	14.2	7.4	3.6	3.3
Skilled	12.8	12.0	17.2			
Semiskilled	17.4	11.4	12.9			
Goiter, simple:						
Professional and business	2.9	2.8	2.2	15.8	0	8.1
Clerical	3.5	3.1	4.1	17.6	11.9	12.6
Skilled	.6	.8	1.1			
Semiskilled	2.2	.9	3.2			
Upper respiratory tract diseases: [10]						
Professional and business	5.7	8.4	8.8	15.8	10.5	5.4
Clerical	10.4	11.5	8.1	10.3	8.3	2.6
Skilled	18.0	7.4	6.5			
Semiskilled	14.1	8.8	1.6			
Lower respiratory tract diseases: [11]						
Professional and business	5.7	1.4	4.4	5.3	5.3	5.4
Clerical	2.1	0	1.4	0	2.4	1.1
Skilled	4.7	3.5	0			
Semiskilled	3.3	0	0			
Suspicious chest findings or tuberculosis: [12]						
Professional and business	5.7	0	3.3	15.8	0	5.4
Clerical	3.5	.8	.7	2.9	0	.4
Skilled	4.7	1.5	0			
Semiskilled	5.4	0	0			
Cardiac abnormalities: [13]						
Professional and business	8.6	2.8	7.7	0	5.3	2.7
Clerical	10.4	3.1	4.1	2.9	4.8	5.9
Skilled	6.4	5	8.6			
Semiskilled	5.4	7	3.2			
Pulse rates 90 or more:						
Professional and business	8.6	9.8	4.4	5.3	5.3	11.1
Clerical	[3] 14.7	14.5	[3] 12.1	[3] 26.1	[3] 22.3	24.5
Skilled	[3] 13.8	[3] 8.5	[3] 12.5			
Semiskilled	[3] 11	13.2	21			
Pulse rates less than 60:						
Professional and business	2.9	1.4	4.4	10.6	0	0
Clerical	[3] 1.4	6.9	[3] 1.3	0	[3] 1.2	.4
Skilled	[3] 10.3	[3] 7.7	[3] 4.2			
Semiskilled	[3] 7.7	3.5	3.2			
Blood pressure 140–159 mm:						
Professional and business	[3] 25.7	[3] 7	12	10.5	0	8.1
Clerical	13.9	8.4	[3] 6	[3] 13	[3] 1.2	6.3
Skilled	[3] 18.4	[3] 12.5	[3] 20.4			
Semiskilled	14.1	12.3	17.7			
Blood pressure 160 mm or more:						
Professional and business	2.9	[3] 2.8	2.2	0	0	2.7
Clerical	4.2	1.5	[3] 4	[3] 2.9	0	1.1
Skilled	[3] 6.5	[3] 3.1	[3] 7.9			
Semiskilled	2.2	.9	1.6			
Blood vessels, abnormalities of: [14]						
Professional and business	0	11.3	8.8	0	0	5.4
Clerical	2.8	6.1	4.7	2.9	0	0
Skilled	11	9.6	16.1			
Semiskilled	5.4	3.5	6.5			
Abdominal disorders: [15]						
Professional and business	2.9	9.8	9.9	5.3	5.3	5.4
Clerical	4.9	1.5	3.4	2.9	8.3	7.4
Skilled	4.7	4.3	2.2			
Semiskilled	4.4	1.8	0			

See footnotes at end of table.

TABLE 3.—*Physical findings*—Continued

Occupational group [1]	Men			Women		
	Early-depression unemployed	Late-depression unemployed	Employed	Early-depression unemployed	Late-depression unemployed	Employed
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Hernias:						
Professional and business	5.7	4.2	1.1	0	0	0
Clerical	2.1	3.1	2	0	0	.4
Skilled	6.4	5.8	5.4			
Semiskilled	4.4	.9	8.1			
Genito-urinary system, diseases of:						
Professional and business	8.6	8.4	3.3	5.3	0	0
Clerical	4.2	1.5	6.7	4.4	0	0
Skilled	6.4	3.5	3.2			
Semiskilled	1.1	1.8	4.8			
Menstrual function, disorders of: [10]						
Professional and business				5.3	5.3	16.2
Clerical				17.6	2.4	8.9
Skilled						
Semiskilled						
Albuminuria or nephritis:						
Professional and business	0	5.6	1.1	0	0	5.4
Clerical	4.2	.8	0	7.4	1.2	1.5
Skilled	4.1	4.3	0			
Semiskilled	1.1	4.4	4.8			
Glycosuria or diabetes:						
Professional and business	2.9	2.8	2.2	0	0	0
Clerical	.7	2.3	2.7	1.5	2.4	.7
Skilled	5.2	1.2	2.2			
Semiskilled	0	2.6	4.8			
Syphilis: [17]						
Professional and business	2.9	1.4	1.1	0	0	0
Clerical	.7	0	.7	1.5	0	0
Skilled	5.2	2.3	1.1			
Semiskilled	2.2	1.8	1.6			
Skin diseases:						
Professional and business	5.7	5.6	4.4	0	0	0
Clerical	6.9	9.9	3.4	7.4	3.6	4.8
Skilled	4.1	2.3	6.5			
Semiskilled	8.7	6.1	1.6			
Mental or nervous conditions: [18]						
Professional and business	2.9	4.2	4.4	10.6	0	2.7
Clerical	10.4	.8	2.0	14.7	6.0	2.6
Skilled	6.4	4.6	1.1			
Semiskilled	2.2	.9	1.6			
Locomotor system, abnormalities of:						
Professional and business	25.8	15.5	14.3	15.9	15.8	10.8
Clerical	19.4	9.2	6.7	23.5	4.8	8.6
Skilled	19.2	14.3	18.3			
Semiskilled	19.6	14.0	9.7			

[1] For number of cases in the various groups see table 2.
[2] In relation to averages for age and height given in the medico-actuarial tables.
[3] In tabulating the data some of the items were rejected from consideration for various reasons. In each case, percentages were derived for the particular number of items remaining under each category after the elimination of rejected items.
[4] Visual defects as indicated by the Snellen test. If the subject used glasses, they were worn during test.
[5] Partial and complete as indicated by the Ishihara test cards.
[6] Some examinations were done with the 3A Western Electric audiometer; others with the watch test.
[7] Includes chronic otitis media, thickened ear drum, perforated ear drum, etc.
[8] Examinations of teeth were made only by physicians; hence the prevalence of caries reported is lower than actually exists. Differences between groups, however, are dependable.
[9] Indicates partial or complete nasal obstruction caused by deviated septa, septal spurs, hypertrophied turbinates, etc.
[10] Includes diagnoses of sinusitis, nasal polyps, septic tonsils, hypertrophied tonsils, tonsil tags, chronic rhinitis, hay fever, etc.
[11] Tuberculosis and suspected tuberculosis not included.
[12] Includes definite diagnoses of tuberculosis and cases in which the physical findings or physical findings and the history together were sufficiently suggestive of tuberculosis for the examining physician to advise an X-ray of the chest.
[13] Includes endocarditis, arrythmias, chronic myocarditis, etc.
[14] Includes varicose veins, hemorrhoids, and arteriosclerosis.
[15] Includes gastric distress, gastric ulcer, duodenal ulcer, cholecystitis, chronic appendicitis, chronic constipation, possible cancer, etc.
[16] Includes dysmenorrhea, amenorrhea, metorrhagia, and menorrhagia.
[17] Diagnosis based upon a positive Wassermann test, or history with physical findings of syphilis or upon both.
[18] Includes nervousness, tics, delusions, tremors, strokes, post-encephalitis, paresis, epilepsy, migraine, nervous fatigue, hypochondriasis, hysteria, insomnia, high-strung nervous type, speech difficulties, etc.

Underweight of 10 percent or more is distinctly more prevalent among the early-depression unemployed men than among the employed men of the professional and business official and clerical groups; but there is no significant difference between the prevalence of underweight among the women of these groups or among the men of the other occupational groups. Overweight of 20 percent or more among the men is most prevalent in the employed group, but among the women is distinctly more prevalent among the early-depression unemployed than among either of the other groups. This suggests that for women overweight constitutes a distinct handicap in obtaining and holding employment.

The specific physical defects and diseases which bear the most definite relationship to the employment status in all or most occupational groups are defective vision, impairment of hearing, dental caries, gingivitis and pyorrhea, abnormalities of the locomotor system, and suspicious chest findings. In addition, diseases of the respiratory tract, nervous and mental disturbances, syphilis, etc., are of greater prevalence among the early unemployed than among the employed of one or more occupational groups. Dysmenorrhea is distinctly more prevalent among unemployed than among employed clerical women, but the reverse is true among the small group of women in the professional worker and business official class.

SUMMARY AND COMMENT

In general, the occurrence of physical handicaps or defects is greater among the unemployed than among the employed groups of each occupational class, and greater among the early-depression unemployed than among the late-depression unemployed. This condition obtains in spite of the fact that the occurrence of defects among the employed is relatively high and that an individual's physical condition was not determined, and in most instances probably not even considered, when he or she was employed or discharged. However, most employers would prefer to drop first the least efficient of their employees. Hence, although no special method for determining efficiency was utilized, it is probable that the early-depression unemployed group, in which the occurrence of physical handicaps is consistently highest, contains a relatively large proportion of the less efficient individuals. This would seem to indicate that the individual with physical handicaps is more likely to become unemployed than the one who is in better physical condition.

The reasons that such physical defects as impaired hearing, defective vision, syphilis, diabetes, diseases of the respiratory system, of the heart, etc., might be related to employment are too apparent to need comment. Other conditions, such as dental caries and pyorrhea,

may be related to employment status because they reflect a general attitude of carelessness, because they impair efficiency, because they have developed as a result of unemployment, or because they are part of a vicious cycle involving several of these factors. Although underweight of extreme grade, particularly in young persons, tends to be associated with lowered physical efficiency, its relationship to unemployment is more likely to be on the basis of effect than of cause.

The reason for the apparent relationship between employment status and blood pressure or pulse rate which appears in certain of the occupational groups is not entirely clear from the physiological point of view. The individual with high blood pressure is frequently pictured as a determined, energetic worker; in fact, Moschowitz,[4] in a paper on hypertension, speaks of "the tragedy of the successful man." On the other hand, high blood pressure is likewise found in "hobos" and ne'er-do-wells. We know also that persistent hypertension eventually leads to cardiovascular deterioration and failure. Slow pulse rates may indicate a phlegmatic temperament and rapid rates a nervous disposition, but either may be produced by disease. Both blood pressure and pulse rates, however, are so variable and so susceptible of influence by many factors that a single reading of either has but little diagnostic value in a study such as this.

Finally, a study of the table of physical findings cannot fail to impress one with the great possibility of increasing individual health, efficiency, and happiness by the prevention or correction of physical handicaps in the employed as well as the unemployed groups. Defective vision can usually be corrected by glasses; certain types of deafness are amenable to treatment, and the handicap due to progressive deafness usually can be overcome; dental caries can be prevented or arrested; pyorrhea can be prevented or cured; syphilis can be cured if diagnosed and treated early; and many similar corrections can be made.

Although it is difficult to generalize from the findings in such diverse occupational groups as the subjects of this study, the data seem to justify the following statements: (1) That individuals who are in good health and who keep themselves as free as possible from physical handicaps are less likely to suffer unemployment than individuals who are handicapped by physical defects; and (2) that employers could expect greater efficiency from their employees if provisions were made to discover and correct their physical handicaps and to keep them in better general health.

[4] Moschowitz, Eli: Cause of hypertension of the greater circulation. Jour. Am. Med. Assoc., 93:347 (Aug. 3, 1929).

MICROSCOPIC APPEARANCE OF EXPERIMENTALLY PRODUCED DUST NODULES IN THE PERITONEUM[1]

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The gross appearances and behavior of nodules in the peritoneal cavity of guinea pigs caused by a series of 16 different dusts have been previously reported.[2] These gross responses were so differentiated that it was possible to divide the physiological behavior of dusts in the tissue into the following three groups: (1) A group in which the dust was absorbed or disappeared without visible gross damage; (2) a group in which the dust initiated cellular proliferation followed by fibrosis and retrograde changes; (3) a group in which the dust remained inert in the tissues, neither being absorbed nor causing gross proliferation. The term "inert" is used to describe the *gross appearance and behavior* of these dusts in the tissues. While they cause but little cellular proliferation, they become fixed in the tissues and, when inhaled, may remain in the tissues of the lungs.

While the histologic variations in the three groups were not as striking as the well-marked gross responses, they were sufficiently distinctive to permit differentiation of the dusts into the same three groups.

The dusts considered in this and the previous study are as follows:

1. *Absorptive group:* Calcite, limestone, precipitated calcium carbonate, gypsum, and portland cement.
2. *Proliferative group:* Pure crystalline quartz (2 samples) and a highly siliceous chert.
3. *Inert group:* Anthracite coal (2 samples), bituminous coal (2 samples), hematite, carborundum, precipitator ash, and soapstone.

The median particle sizes of the dusts ranged from 0.75 microns to 1.45 microns, with the exception of soapstone, which was 3.5 microns. The amount injected was 0.2 gram of dust in sterile physiological saline solution. The animals were killed and examined at intervals of 7, 14, 30, 56, 90, 180, and 360 days after injection.

MICROSCOPIC APPEARANCE OF THE DUST NODULES

ABSORPTIVE GROUP

Calcite.[3]—In 7 days the nodule consists of a large clump of dust with which is mixed fine granular necrotic material. The dust and necrotic material practically fill the entire nodule. The surface is

[1] From the Office of Industrial Hygiene and Sanitation.

[2] Miller, J. W., and Sayers, R. R.: The response of peritoneal tissue to dusts introduced as foreign bodies. Jour. Am. Med. Assoc., *103:* 907-911 (Sept. 22, 1934). Also Pub. Health Rep., *49:* 80-89 (Jan. 19, 1934).

[3] Pure Iceland spar. Chemical analysis: Calcium carbonate 99.8, silica 0.1 percent. Median size of particles 1.4 microns.

covered by a thin layer of connective tissue and a layer of peritoneal cells. Surrounding the dust is a narrow cellular zone, widest at the base and tapering at the periphery of the nodules. The cells are primarily fibroblasts and are usually in a parallel arrangement, more or less encapsulating the dust. A few macrophages occur in the cellular portion, most frequently near the large dust clump. A small group of macrophages simulating a giant cell is seen infrequently in the base. Few to numerous capillaries are noted in the edges and bases of the nodules. An occasional small group of extravasated red blood cells is noted at various points of the nodule.

In 14 days the microscopic appearance is essentially the same. Capillary buds accompanied by macrophages and fibroblasts are seen extending into the dust mass. In some small nodules all of the necrotic material has disappeared and a few macrophages at the edges of the nodules show fine, brown pigment particles in their cytoplasm.

In 30 days the pigment-bearing macrophages are slightly increased in numbers and a few pigmented connective tissue cells occur. The necrosis about the dust varies according to the size of the nodule. It is absent in the small nodules. More unpigmented macrophages are present than were noted in 14 days, and adult connective tissue cells are present throughout the nodules in moderate numbers.

In 56 days the appearance of the nodules is practically the same.

In 90 days the connective covering is more dense. Pigmented macrophages and connective tissue cells occur in great numbers in the base and at the edges of the nodules. Pigment-bearing cells extend into the peritoneum adjacent to the nodules. Necrosis is very scant or absent; only a few of the original dust particles remain. The nodules are almost entirely cellular, consisting of macrophages, fibroblasts, and adult connective tissue cells.

In 180 days the nodules are composed of numerous pigmented connective cells and a considerable number of fat cells. An increase of connective tissue with collagen strands runs through the nodule. The usual gross appearance is a small, flat, brown pigmented area in the peritoneum. Occasionally a small nodule presents the microscopic appearance of nodules seen in 90 days.

In 360 days all that remains are small areas of connective tissue in which are pigmented connective tissue cells, and a few pigmented macrophages scattered through large areas of fat cells.

The capillaries are usually few in number, increasing with the size of the nodule.

Limestone.[4]—The microscopic picture presented by limestone is essentially the same as that of pure calcite. More brown pigment is

[4] A high-grade Pennsylvania limestone. Chemical analysis: Calcium oxide, 54.4 percent; magnesium oxide, 0.4 percent; iron and aluminum oxides, 0.4 percent; silica 1.5 percent. Petrographic examination showed granular, irregularly rounded calcite. Median size of the particles, 1.45 microns.

formed in the course of the tests and the original dust is more frequently noted in the animals that had remained on test for 360 days than in the case of calcite, indicating that the dust was not as completely absorbed in the same length of time, yet so little remained that it is likely that it, too, would disappear.

Precipitated calcium carbonate.[5]—The reaction is similar to that of calcite and limestone. The dust had all disappeared by 56 days after injection. The relative amount of brown pigment was greater than that formed by either calcite or limestone. Following 90 days after injection the pigment decreased in quantity, but some was still present 360 days later, occurring in macrophages and connective tissue cells which were both isolated and clumped in areas of fat cells. These pigmented cells also appeared as a slight thickening of the subperitoneal connective tissues.

Gypsum.[6]—The necrosis with and about the dust was not as prominent in the 7- and 14-day tests as was found with the previous dusts and was entirely absent in 30 days. Brown pigment appears in considerable quantities in 14 days, increases in amount as long as the original dust is present (between 90 and 180 days), and then decreases. The appearance of the dust nodules 360 days after injection is the same as that of limestone and calcite.

Portland cement.[7]—The initial reaction is very severe, due to the irritating properties of the dust, but it subsides in 14 days. Large brown particles, different from the bulk of the dust in the nodule, are noted in considerable quantities in 7 days. In 30 days finer, brown intracellular particles are noted. In 180 days the original dust has disappeared from most of the nodules. These nodules consist of small groups of pigment-bearing macrophages and connective tissue cells. Some of the cells bear large pigment particles, quite possibly those noted in 7 and 14 days and a component of the original dust. The type of response is like that of limestone, calcite, and gypsum.

PROLIFERATIVE GROUP

Quartz.[8]—Two samples of pure crystalline quartz were used. They gave identical results.

In 7 days the nodule consists of a large clump of dust mixed with cellular debris, directly under a thin connective tissue capsule covered

[5] A chemical byproduct. Chemical analysis: Calcium carbonate, 87.9 percent; magnesium carbonate 10.0 percent; magnesium oxide, 0.1 percent; iron and aluminum oxides, 0.6 percent; silica, 0.4 percent. Median size of the particles, 1.28 microns.

[6] The uncalcined, natural mineral. Petrographic examination showed approximately 30 percent as calcite in the form of rounded granules and irregular rhomboidal crystals and approximately 70 percent as fragmented particles of gypsum. Median size of the particles, 1.3 microns.

[7] Petrographic examination showed normal portland cement. The particles were sharp and irregular. Median size of the particles, 1.05 microns.

[8] (*a*) Ground rock crystal of high purity. Chemical analysis showed 99.4 percent silica. Petrographic examination showed clear, crystalline, normal quartz. Median size of the particles, 1.7 microns. (*b*) Finely ground Pennsylvania quartz. Chemical analysis showed 99.1 percent silica. Petrographic examination showed quartz of high purity. Median size of the particles, 1.6 microns.

by a layer of peritoneal cells. A fairly wide zone of fine granular necrotic material surrounds the dust mass. The cellular elements are most numerous at the base and periphery of the nodules. The cellular portions consist of many fibroblasts in various stages of development, some adult connective tissue cells, and a few scattered macrophages, some with engulfed dust particles. The macrophages are most frequently noted near the dust or necrotic zone. The fibroblasts are arranged in concentric whorls and interlacing bundles. They assume a more parallel arrangement about the dust, forming an apparent inner capsule. Fibroblasts are by far the most numerous of the cells. No giant cells are noted. A moderate number to numerous extravasated red blood cells are present at the edges and throughout the nodules. Numerous capillaries occur in the cellular portions.

In 14 days the connective tissue covering is thickened. Fibroblasts still predominate, though the number of macrophages has increased. They are most numerous at the edge of the necrotic zone and may contain dust particles. Only a very infrequent aggregation giant cell is noted. The amount of necrosis appears less and the extravasated red blood cells are fewer than were noted in 17 days.

In 30 days the covering is thin, dense, well-formed connective tissue. The necrosis varies in amounts from small, scattered areas, some about dust clumps, to a fairly wide zone about a large central mass of dust. In some nodules no necrosis is noted. Both the amount of necrosis and the quantity of dust in the central masses are less than were noted in 7 days after injection. The predominating cell is now the macrophage. Many are filled with dust particles, and those near the dust clumps are quite large. Many fibroblasts are mixed with the macrophages. Aggregation giant cells are few in number and are absent in many sections. When much dust is present the nodule is similar in appearance to the nodules found in 14 days. The extravasation of red blood cells noted in the nodule in 14 days is absent.

In 56 days the picture is essentially the same. Numerous fibroblasts underlie the capsule, and a few strands of fibrous connective cells run through the cellular portion of the nodule. A large portion of the dust is engulfed in macrophages.

In 90 days the necrotic areas vary in size but are generally increased. Their relation in size to the cellular portion of the nodule also varies from less in some nodules to greater in others. Early calcification is noted at the centers of these necrotic areas. In some large nodules several centers of necrosis irregularly join each other, forming intervening pockets in which the cellular elements occur. An occasional small blood vessel showing hyalinization of its walls occurs in the necrotic areas. The cells are fibroblasts, macrophages containing

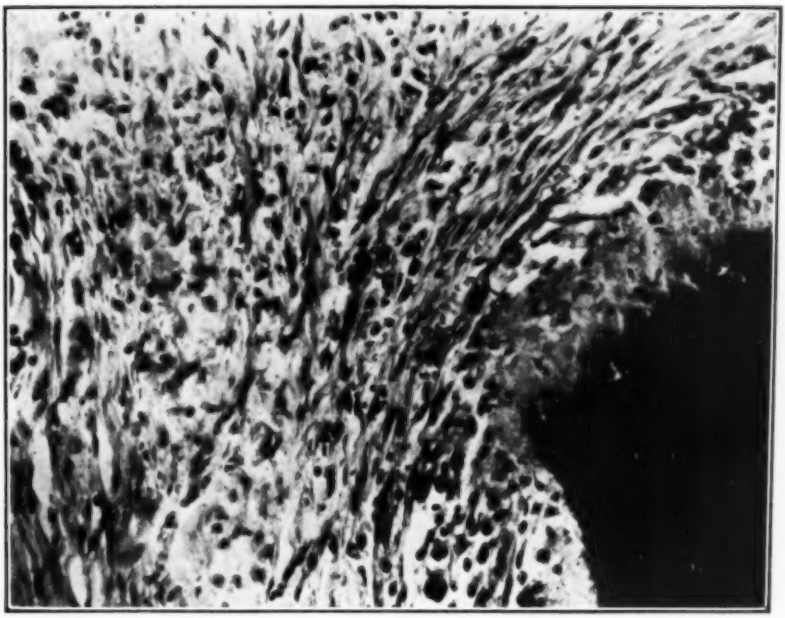

FIGURE 1.—Limestone, 7 days after injection. × 655.

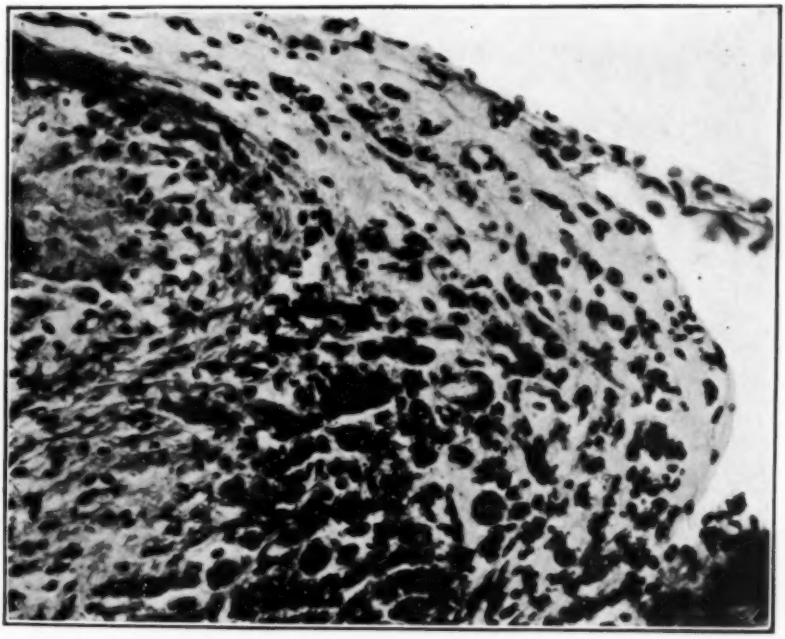

FIGURE 2.—Limestone, 30 days after injection. × 655.

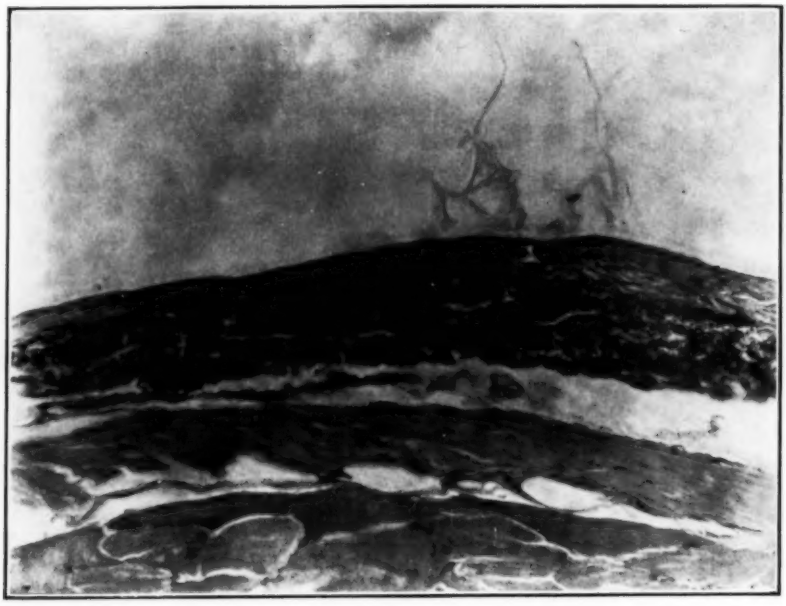

FIGURE 3.—Limestone, 180 days after injection. × 655.

FIGURE 4.—Limestone, 360 days after injection. × 655.

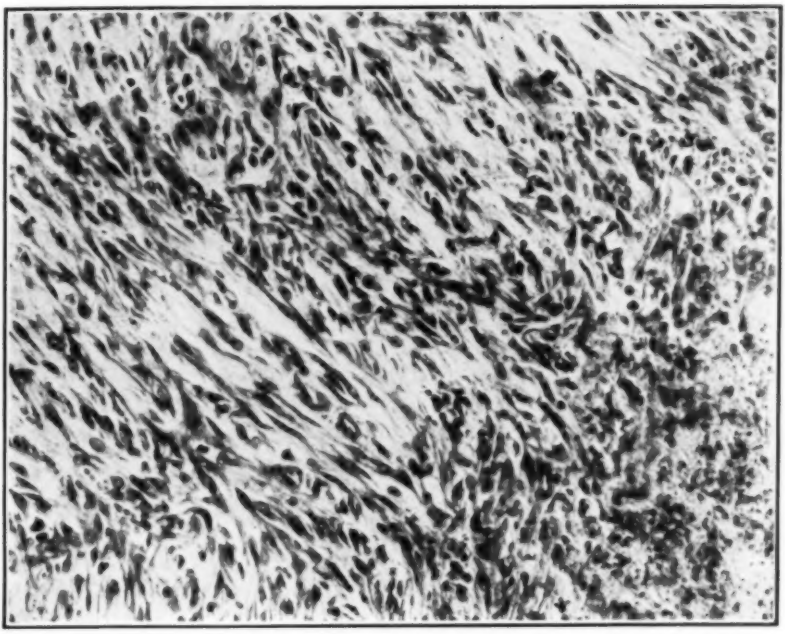

FIGURE 5.—Quartz, 7 days after injection. × 655.

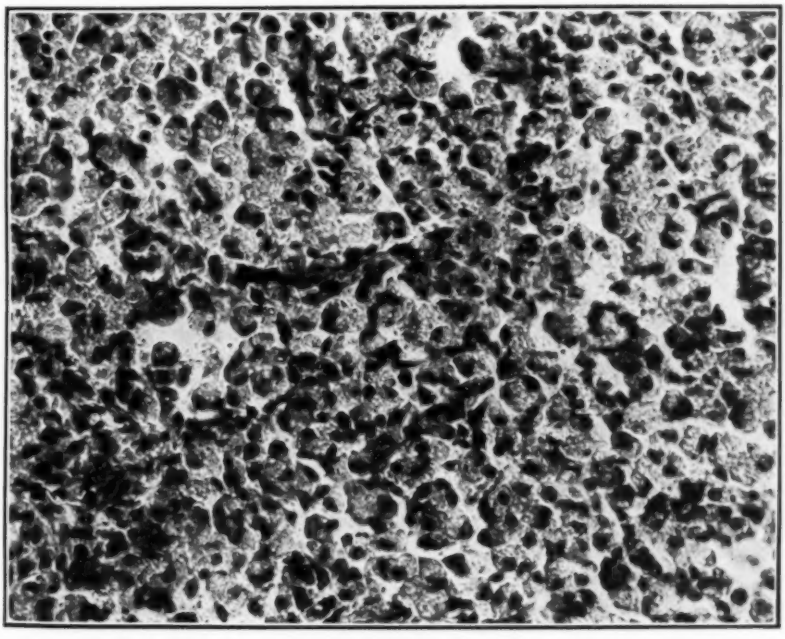

FIGURE 6.—Quartz, 30 days after injection. × 655.

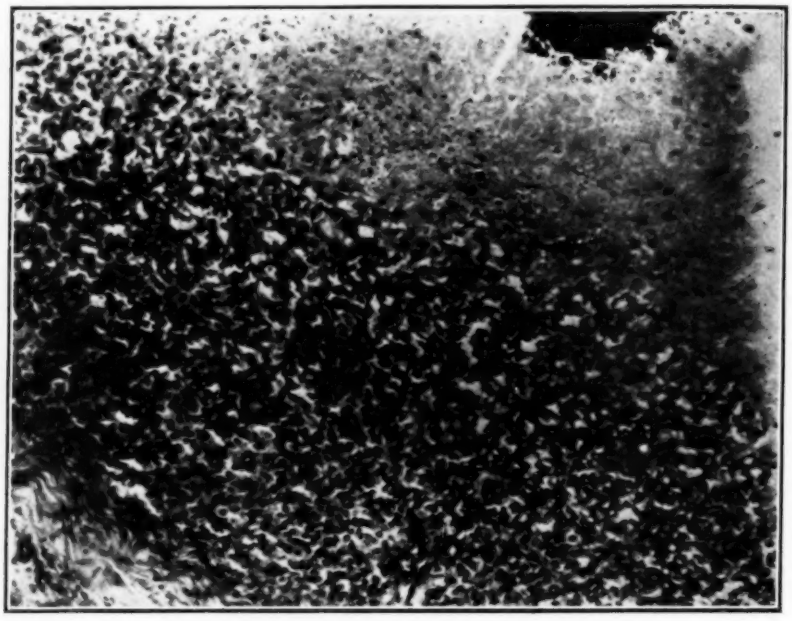

FIGURE 7.—Quartz, 180 days after injection. × 305.

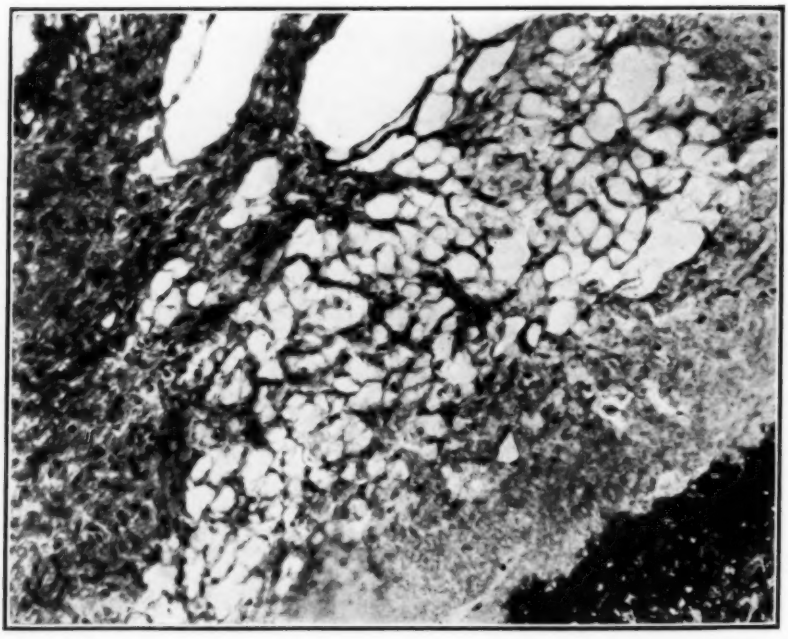

FIGURE 8.—Quartz, 360 days after injection. × 655.

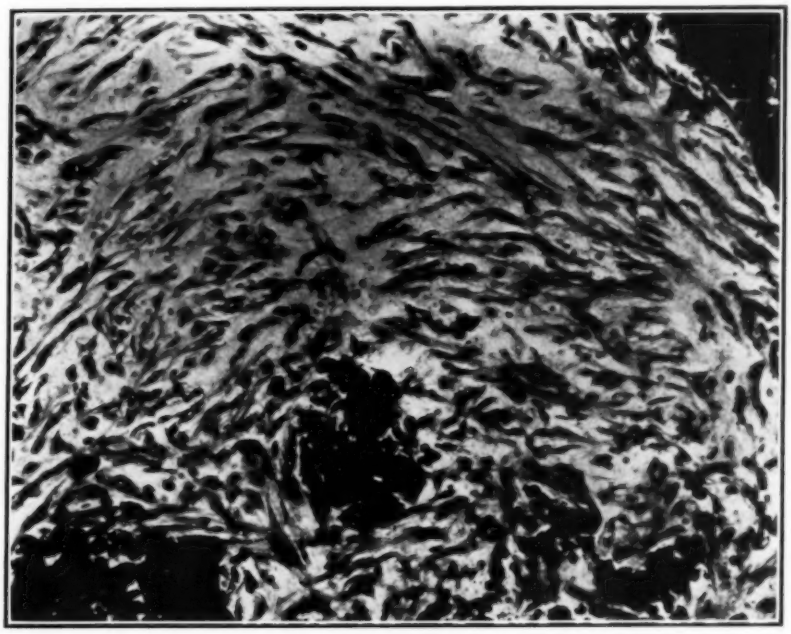

FIGURE 9.—Anthracite coal, 7 days after injection. × 655.

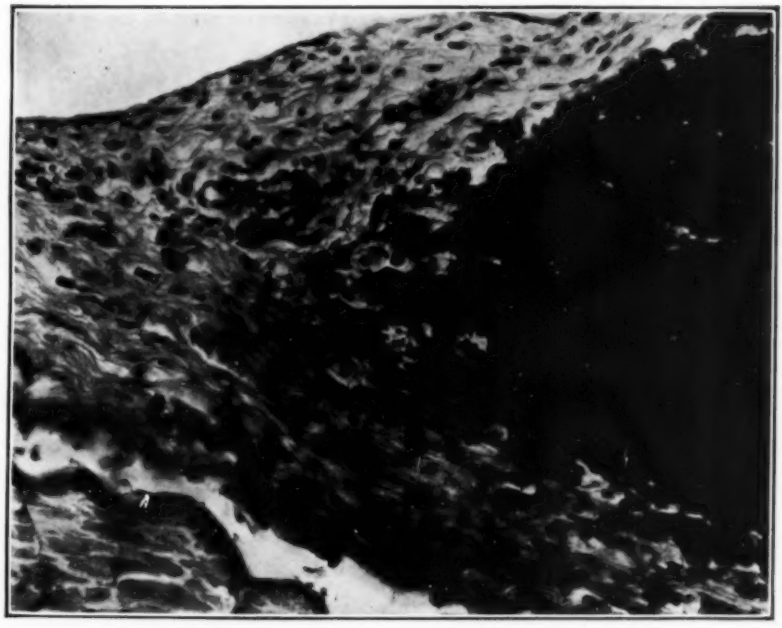

FIGURE 10.—Anthracite coal, 30 days after injection. × 655.

FIGURE 11.—Anthracite coal, 180 days after injection. × 305.

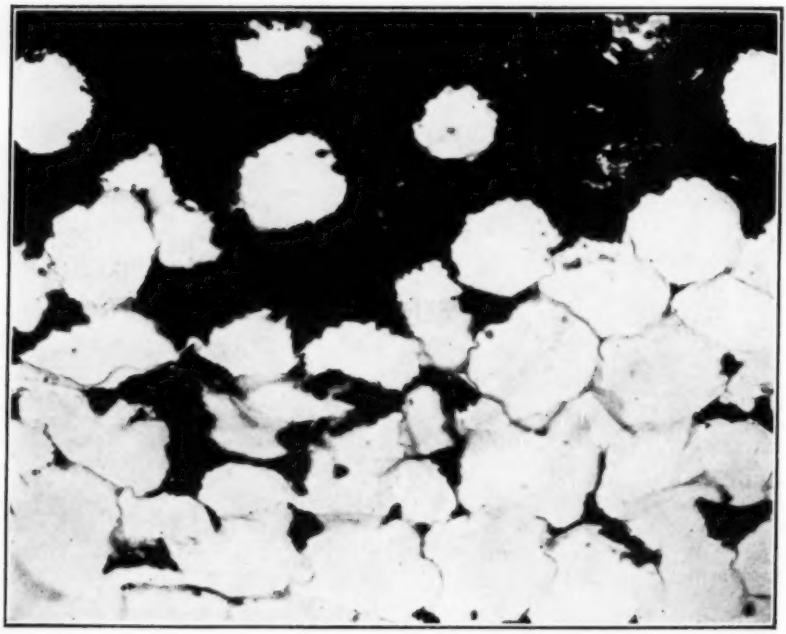

FIGURE 12.—Anthracite coal, 360 days after injection. × 655.

dust particles, and adult connective cells, rather evenly distributed. Capillaries are numerous throughout the nodules.

In 180 days the covering is dense fibrous connective tissue, with an occasional fat cell at the edge of the nodule. Large, irregular areas of fine, granular, necrotic material, collagen fibers, some hyalinized, and cellular debris compose the bulk of the nodule. The centers of these necrotic areas show advanced calcification. In spaces between necrotic areas are numerous adult connective tissue and fat cells and a few fibroblasts.

In 360 days the areas of calcification and necrosis are more extensive. Adult connective tissue and fat cells constitute the cellular elements. More fat is present than was noted in 180 days. With polarized light, a sprinkling of minute quartz particles is seen scattered throughout the entire nodule. Much less of the dust is present than was noted in 7 days, indicating that a large portion has been assimilated by the tissues.

Chert.[9]—The reaction in general is the same as that of quartz. As this dust contained limonite, giving it a brown color, there were minor changes in the appearance of the nodules. The fine, brown dust was noted in macrophages in both the 7- and 14-day tests. These macrophages increased in numbers through the 56-day tests, but were overshadowed by the fibroblasts in 90 days. Calcification of the necrotic areas was not noted until 180 days. It was more scattered but well defined.

INERT GROUP

Anthracite coal.[10]—Two samples were used. They gave identical reactions.

In 7 days the dust nodule consists of a large clump of densely packed dust with irregularities and lighter areas at its margin. No necrosis is noted with or about the dust. A narrow cellular zone, widest at the base, surrounds the dust. The nodule is covered by a thin layer of connective tissue merging into an underlying layer of fibroblasts. The basal portion is composed of fibroblasts, mostly in parallel arrangement. Some strands of fibroblasts are seen penetrating the dust mass. Only an occasional macrophage is noted near the dust. Isolated dust particles and small clumps of dust, some intracellular, are scattered throughout the cellular portion, and a few similar particles and clumps extend to a considerable distance in the peritoneal connective tissue adjacent to the edges of the nodules. Some of these particles are clearly in connective tissue cells and others

[9] The waste product from the concentration of lead and zinc ores. Chemical analysis showed 76.1 percent silica. Petrographic examination showed quartz and chert, stained with limonite, predominating. About 25 percent of the silica was normal, angular quartz fragments. Median size of the particles, 1.22 microns.

[10] A Pennsylvania anthracite. Petrographic examination showed about 95 percent coal and about 5 percent inorganic materials. Of the latter, about 60 percent appeared as quartz and about 40 percent as calcite, siderite, and rutile. Median size of the particles, 0.75 micron. The second specimen was similar in composition. The median size of the particles was 1.11 microns.

are apparently in macrophages, but the color of the dust obscures identification. Few to a moderate number of capillaries occur throughout the nodules, and a moderate number of extravasated red blood cells are noted in the covering and at the edges.

In 14 days more fibroblasts are present and the macrophages are increased from an occasional one to a few or moderate number. The dust mass appears to be made up of small, more or less uniform sized clumps, and more dust is dispersed through the cellular portion of the nodule. The hemorrhage noted in 7 days has disappeared.

In 30 days the dust is more widely dispersed through the cellular portion of the nodule. At the tapering edges, more dust extends into the adjacent subperitoneal connective tissue. The cellular elements are mostly obscured by the dust, but an occasional visible area shows them to be fibroblasts and macrophages.

In 56 days the nodules are more flattened and practically all of the cellular elements are obscured by the dust. Occasional fibroblasts and connective tissue cells are seen throughout the nodules, but no macrophages are noted.

In 90 days the nodules are more flattened, but are similar in structure to those noted in 56 days. More fibrous tissue cells and fewer fibroblasts are present. An occasional small nodule shows a few fat cells at its edges.

In 180 days more fat cell formation is noted at the edges of the nodules. Small clumps and isolated particles of dust are mixed with the fat cells. A few stranded and isolated fibrous tissue cells run through the dust mass which fills the entire nodule.

In 360 days, more fat cells are present at the edges and bases of the nodules. Mixed with the fat are many isolated particles and small clumps of dust. The cells, when not obscured by the dust, are adult connective tissue cells. The appearance of the nodules, with the exception of the increased number of fat cells, is essentially the same as that noted in 180 days.

Bituminous coal.[11]—Two samples of bituminous coal were used. Both gave identical reactions.

The response is essentially the same as that produced by anthracite coal. More fibrous connective tissue than was found with the anthracite coal was noted in the 14-day tests. More fat cells were found in the 90-, 180-, and 360-day tests.

Hematite[12] *and carborundum.*[13]—Both of these dusts produced a response similar to that of anthracite and bituminous coal.

[11] From Pennsylvania. Petrographic examination showed from 1 to 2 percent inorganic content, essentially all calcite. Median size of the particles, 1.15 microns. The second specimen was from Pennsylvania. Petrographic examination showed from 1 to 3 percent inorganic content, mainly quartz, calcite, and clay. Median size of the particles, 1.19 microns.

[12] Pure ferric oxide in a finely divided state. Petrographic examination showed a high purity hematite as fine, uniform particles. Median size of the particles, 0.95 micron.

[13] Pure manufactured silicon carbide. Petrographic examination showed no impurities. Median size of the particles, 1.15 microns.

Precipitator ash.[14]—This dust consists of small, smooth globules and fine amorphous particles. The former are more numerous. Both types of particles appear engulfed in macrophages and connective tissue cells. In 7 days the fibroblasts in the basal portion of the cell zone are pointed toward and penetrate the dust mass, in addition to assuming an encircling appearance as was noted with the other dusts. Dust-bearing macrophages are most numerous in the 90-day tests. In 180 days the fibroblasts are predominant, though many macrophages still remain. The macrophages are absent in 360 days. As no necrosis is present, and as the nodules are approximately the same size in 360 days as they were in 7 days after injection, this dust has been classed as belonging to the inert group.

Soapstone.[15]—Grossly this dust behaved in the peritoneum like the other dusts of the inert group, but microscopically there was some variation. It is to be noted that the particles of this dust were larger (3.5 microns median size) than those of the other dusts and were long, narrow spicules with sharp pointed ends.

In 7 days numerous macrophages, mixed with a greater number of fibroblasts, form the cellular portion of the nodules. Small clumps of slender dust particles in parallel arrangement are surrounded by macrophages. Several bundle-like groups of dust particles may be in the same clump. These macrophage-invested clumps of dust are numerous in the bases of the nodules, and their numbers increase as the central mass of dust is approached. Some have the appearance of aggregation giant cells, though their nuclei are regularly spaced about the periphery of the small clump of dust particles. Fibroblasts predominate in numbers.

In 14 days no material changes are noted in the appearance of the nodules.

In 30 days the macrophages have so increased in numbers as to be the predominating cell type. Some have dust in their cytoplasm, but most are arranged about dust clumps of varying sizes. Aggregation giant cells with regularly spaced peripheral nuclei are also increased in number.

In 56 days practically all of the dust has been engulfed by the cells and dispersed throughout the nodule. Few large collections of dust particles remain. Fibroblasts are increased in numbers but are less numerous than the macrophages and aggregation giant cells.

[14] Collected from stacks by electric precipitation. Chemical analysis showed 44.7 percent silica. Petrographic examination showed predominantly perfectly spherical fused glass, rounded semifused masses made up of crystallites, some quartz fragments, calcite, and coal. Median size of the particles, 1.43 microns.

[15] Chemical analysis showed silica, 49.9; calcium oxide, 1.7; and magnesium oxide, 26.2 percent. Petrographic examination showed about 30 percent as tremolite, about 65 percent as talc, and about 5 percent as dolomite. Median size of the particles, 3.5 microns.

In 90 days fibroblasts, singly and in strands, interlace between the dust-bearing aggregation giant cells. Fat cells are noted at the edges of the nodules.

In 180 days the aggregation giant cells engulfing the small clumps of dust are more adult in type. Their nuclei are spindle-shaped and have the appearance of a single layer of encapsulating fibrous connective tissue cells. Fibrous connective tissue cells and fibroblasts are more numerous than in 90 days. More fat cells are present at the edges and bases of the nodules.

In 360 days the nodules are similar in appearance. The nuclei of the aggregation giant cells are dense and elongated and the resemblance to fibrous connective tissue cells is more marked. More fatty metamorphosis is noted at the edges and bases of the nodules.

It is interesting to note that the giant cells formed by the macrophages encircling the dust clumps, and subsequently fusing, present a different appearance from that of the ordinary so-called foreign body giant cell. The nuclei of these cells are regularly arranged and spaced at the periphery and the engulfed dust is centrally placed in the cytoplasm.

The amount of dust is approximately the same in 360 days after injection as was present in 7 days. The dust is engulfed or surrounded relatively early by the cells and does not persist as a central, free mass. The edges of the nodules are tapering throughout the series of tests, but no dust particles are seen in the adjacent subperitoneal connective tissue. There is a sharp line of demarcation between the cellular edge of the nodule and the adjacent peritoneum. Necrosis is absent in all of the tests.

In spite of some points of apparent dissimilarity in the microscopic appearance of the behavior of this dust, its inclusion with the other dusts of the inert group seems logical, as it neither causes gross proliferation nor is it absorbed from the tissues.

SUMMARY

Absorptive group.—Grossly the nodules decrease in size as the interval between injection and examination increases.

The original dust is absorbed or disappears from the peritoneum.

Fine granular necrosis found initially with and about the dust gradually decreases in amount and disappears.

The early fibroblastic reaction is followed by the appearance of numerous macrophages in 30 days and finally the replacement by small amounts of fibrous tissue with subsequent fatty metamorphosis.

The fine brown pigment granules appear at approximately the same time that the macrophages increase in numbers. This pigment is absent in the original dust and does not give an iron reaction.

The numerous giant cells usually accompanying a foreign body reaction are infrequently seen.

A scant hemorrhage occurs and subsides usually in 14 days. This is probably due to the initial injury by the dust.

Proliferative group.—Grossly the nodules increase in size up to 90 days following injection. The 180- and 360-day nodules are approximately the same size as those seen in 90 days.

The original dust, especially quartz, decreases in quantity as the interval between injection and examination increases.

The fine granular necrosis with and about the dust decreases slightly up to 56 days and then increases and is subsequently calcified.

The early fibroblastic reaction is followed by the appearance of numerous macrophages in 30 days which phagocytize the dust particles and, later, fibrous tissue formation with subsequent retrograde changes including necrosis and fatty metamorphosis.

Numerous giant cells usually noted in a foreign body reaction are rarely seen.

The initial traumatic hemorrhage has subsided in 30 days.

Inert group.—Grossly the amount of dust found in the peritoneal cavity 360 days after injection is approximately the same as is noted in 7 days. The nodules become more flattened and dispersed dust particles are noted over considerable peritoneal extent.

The original dust appears to be present in the same quantity that was injected.

Necrosis is absent throughout the entire series of tests.

Early fibroblastic reaction occurs. No great numbers of macrophages are noted at any period in the tests. They are possibly obscured by the color of the dusts.

Later fibrous tissue formation is not particularly extensive but is followed by fatty metamorphosis.

Dust particles are frequently seen in fibrous connective tissue cells.

The giant cells usually noted in foreign body reactions are rarely seen, soapstone being the exception.

A very scant initial hemorrhage occurs but subsides between 14 and 30 days.

CONCLUSIONS AND DISCUSSION

The outstanding difference in the three types of reaction is the necrosis found in the dust nodules. In the absorptive group of dusts the necrosis found with and about the dust appears to be entirely traumatic, as it exists in the early stages of the nodules and gradually disappears. In the proliferative group the necrosis found in the 7-, 14-, and 30-day stages likewise appears to be of traumatic origin, but the increase in the size of the necrotic areas, with subsequent calcification in the 90-, 180-, and 360-day tests, indicates that it is due

to the action of silica or its products. In the inert group no necrosis is noted at any stage of the experiments, indicating that the dusts are not sufficiently irritating in their action to cause extensive injury.

The early fibroblastic reaction (7 days after injection), with the later appearance of macrophages, is quite different from the reported response produced in the lungs by inhalation methods.[16] This might be attributed to the fact that there is a greater amount of fibrous tissue in the subperitoneal connective tissue layer than is found in the lungs and that the fibroblastic response is essentially one of encapsulation. It is also possible that this early fibroblast preponderance may be due to the amount and particle size of the dust.

It is, however, interesting to note that representative dusts of these three groups which had been passed through a 325-mesh sieve (43 micron maximum particle size), gave a typical foreign-body reaction in which large numbers of macrophages appeared in 7 days and were the predominating cell type through the 56-day tests. Giant cells were more numerous with the 325-mesh sieved dust, while they were rarely noted and often absent with the air-separated material. These giant cells were typical foreign-body giant cells with eccentrically grouped nuclei and were quite different from those noted in the soapstone experiments.

While the microscopic appearance of the nodules formed by the action of dusts in the peritoneum differs in some respects from those formed in the lungs, an observation also made by Kettle, using subcutaneous injection methods,[17] the response is constant for each of the three groups of dusts and permits, with the gross appearance, the formation of a biological classification as to their physiological behavior. With this biological classification, which in a number of instances has been correlated with clinical observations and industrial surveys, it is quite possible to use intraperitoneal injection methods to determine the pneumoconiotic potentialities of a dust in a relatively short time, usually 60 days.

ACKNOWLEDGMENTS

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[16] Gardner, L. U.: The experimental production of silicosis. Pub. Health Rep., 50: 695–702 (May 24, 1935).

[17] Kettle, E. H.: The interstitial reactions caused by various dusts and their influence on tuberculous infections. Jour. Pathol. and Bacteriol., 35: 395-405 (1932).

DEATHS DURING WEEK ENDED OCT. 26, 1935

[From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Oct. 26, 1935	Corresponding week, 1934
Data from 86 large cities of the United States:		
Total deaths	7,612	7,620
Deaths per 1,000 population, annual basis	10.6	10.6
Deaths under 1 year of age	492	589
Deaths under 1 year of age per 1,000 estimated live births	45	55
Deaths per 1,000 population, annual basis, first 43 weeks of year	11.4	11.3
Data from industrial insurance companies:		
Policies in force	67,558,503	67,008,998
Number of death claims	11,320	11,577
Death claims per 1,000 policies in force, annual rate	8.7	9.0
Death claims per 1,000 policies, first 43 weeks of year, annual rate	9.6	9.9

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended Nov. 2, 1935, and Nov. 3, 1934

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Nov. 2, 1935, and Nov. 3, 1934

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Nov. 2, 1935	Week ended Nov. 3, 1934	Week ended Nov. 2, 1935	Week ended Nov. 3, 1934	Week ended Nov. 2, 1935	Week ended Nov. 3, 1934	Week ended Nov. 2, 1935	Week ended Nov. 3, 1934
New England States:								
Maine	---	2	17	---	54	20	0	0
New Hampshire	---	---	---	---	---	52	0	0
Vermont	2	---	---	---	65	---	0	0
Massachusetts	12	7	---	---	58	46	1	2
Rhode Island	2	---	---	---	36	---	0	0
Connecticut	5	6	9	2	66	72	0	0
Middle Atlantic States:								
New York	38	27	[1]8	[1]13	331	319	5	1
New Jersey	24	10	1	20	10	23	1	2
Pennsylvania	47	54	---	---	97	364	6	3
East North Central States:								
Ohio	138	164	48	7	79	161	9	0
Indiana	86	85	28	27	15	80	0	1
Illinois	92	54	12	10	20	153	2	0
Michigan	8	24	3	1	14	36	2	0
Wisconsin	4	5	34	29	57	118	1	6
West North Central States:								
Minnesota	9	4	1	---	16	74	0	0
Iowa	22	21	---	1	2	20	1	0
Missouri	83	67	39	52	8	97	5	0
North Dakota	2	2	---	---	3	17	0	1
South Dakota	7	1	---	5	7	5	3	0
Nebraska	13	11	---	1	22	4	1	0
Kansas	16	12	---	1	3	43	0	0
South Atlantic States:								
Delaware	---	1	---	---	53	---	0	0
Maryland [2]	17	33	1	---	19	9	3	0
District of Columbia	24	11	2	---	---	3	2	1
Virginia	66	97	---	---	38	194	2	1
West Virginia	49	63	9	14	8	39	1	0
North Carolina [2]	102	119	5	---	7	39	4	0
South Carolina	34	30	141	311	---	1	0	0
Georgia [2]	44	42	---	---	3	---	1	0
Florida [2]	19	8	---	---	1	1	0	0
East South Central States:								
Kentucky	52	103	14	17	53	62	0	1
Tennessee	55	91	5	46	3	7	3	0
Alabama [2]	51	74	27	50	4	53	1	0
Mississippi [2]	21	40	---	---	---	---	0	0

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Nov. 2, 1935, and Nov. 3, 1934—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Nov. 2, 1935	Week ended Nov. 3, 1934	Week ended Nov. 2, 1935	Week ended Nov. 3, 1934	Week ended Nov. 2, 1935	Week ended Nov. 3, 1934	Week ended Nov. 2, 1935	Week ended Nov. 3, 1934
West South Central States:								
Arkansas	25	24	14	6	2	----	1	0
Louisiana	20	21	2	5	3	3	1	1
Oklahoma [4]	16	13	16	40	2	----	2	1
Texas [2]	136	62	103	138	3	12	3	0
Mountain States:								
Montana	----	9	----	2	----	106	1	1
Idaho	----	----	----	3	2	----	0	0
Wyoming	----	----	----	----	8	----	2	0
Colorado	15	8	----	----	4	76	0	0
New Mexico	4	9	----	9	8	34	0	1
Arizona	3	----	13	3	----	6	0	4
Utah [3]	----	----	----	----	----	15	0	0
Pacific States:								
Washington	3	1	3	----	34	81	4	0
Oregon	3	1	17	22	129	10	0	0
California	50	25	21	11	114	20	6	0
Total	1,428	1,441	593	846	1,461	2,475	74	27
First 44 weeks of year	29,009	31,264	109,521	54,733	704,161	660,512	4,867	1,964

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Nov. 2, 1935	Week ended Nov. 3, 1934	Week ended Nov. 2, 1935	Week ended Nov. 3, 1934	Week ended Nov. 2, 1935	Week ended Nov. 3, 1934	Week ended Nov. 2, 1935	Week ended Nov. 3, 1934
New England States:								
Maine	1	0	21	12	0	0	2	16
New Hampshire	0	0	7	7	0	0	0	0
Vermont	1	0	9	7	0	0	1	1
Massachusetts	28	2	147	121	0	0	1	2
Rhode Island	2	0	15	7	0	0	0	2
Connecticut	7	0	30	31	0	0	2	1
Middle Atlantic States:								
New York	23	1	323	271	0	0	13	12
New Jersey	12	1	81	106	0	0	0	11
Pennsylvania	19	5	298	381	0	0	18	32
East North Central States:								
Ohio [2]	1	10	406	512	2	3	18	23
Indiana	2	1	188	188	1	6	0	13
Illinois	5	2	485	386	2	0	22	24
Michigan	12	4	130	188	0	0	10	7
Wisconsin	1	4	302	352	1	43	5	0
West North Central States:								
Minnesota	1	6	230	74	1	7	0	0
Iowa	0	2	106	57	7	1	1	7
Missouri	2	1	113	76	1	6	4	37
North Dakota	1	0	43	22	2	0	1	0
South Dakota	1	0	31	14	6	3	1	0
Nebraska	0	1	35	27	9	5	0	0
Kansas	2	4	79	58	6	0	6	3
South Atlantic States:								
Delaware	0	0	10	5	0	0	0	2
Maryland [2]	2	0	86	96	0	0	8	4
District of Columbia	1	0	6	24	0	0	0	0
Virginia	2	4	82	119	0	0	7	11
West Virginia	0	1	117	191	1	0	10	17
North Carolina [2]	2	0	85	125	0	0	12	5
South Carolina	0	0	11	13	0	0	7	3
Georgia [2]	0	0	23	13	0	0	9	3
Florida [2]	0	0	6	6	0	0	2	1
East South Central States:								
Kentucky	4	3	95	118	0	0	22	44
Tennessee	2	4	104	108	0	0	18	23
Alabama [2]	1	0	28	53	0	1	10	7
Mississippi [2]	0	0	18	30	0	0	9	7

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Nov. 2, 1935, and Nov. 3, 1934—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Nov. 2, 1935	Week ended Nov. 3, 1934	Week ended Nov. 2, 1935	Week ended Nov. 3, 1934	Week ended Nov. 2, 1935	Week ended Nov. 3, 1934	Week ended Nov. 2, 1935	Week ended Nov. 3, 1934
West South Central States:								
Arkansas	1	2	18	7	1	1	6	12
Louisiana	0	1	15	13	0	0	7	16
Oklahoma [4]	0	0	15	13	2	3	14	18
Texas [1]	2	11	66	48	2	3	34	34
Mountain States:								
Montana	0	7	77	2	3	0	1	8
Idaho	0	0	51	3	0	0	6	2
Wyoming	0	1	31	10	0	3	0	1
Colorado	0	0	144	128	7	0	6	8
New Mexico	0	0	30	20	0	0	19	19
Arizona	1	2	13	20	0	0	1	2
Utah [3]	1	1	58	27	0	0	0	0
Pacific States:								
Washington	0	14	79	45	16	23	6	4
Oregon	2	3	42	61	0	0	3	2
California	11	11	198	123	0	0	5	13
Total	153	109	4,587	4,318	72	108	327	457
First 44 weeks of year	9,992	6,759	207,450	174,587	5,758	4,248	15,678	18,511

[1] New York City only.
[2] Typhus fever, week ended Nov. 2, 1935, 29 cases, as follows: North Carolina, 1; Georgia, 18; Florida, 1; Alabama, 4; Texas, 5.
[3] Week ended earlier than Saturday.
[4] Exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week:

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
August 1935										
Hawaii Territory	----	3	3	----	----	----	1	1	0	1
Puerto Rico	----	84	38	1,181	5	3	0	----	0	65
September 1935										
Arizona	3	4	50	17	6	----	8	23	0	16
Nevada	2	----	2	----	2	----	1	13	0	1
October 1935										
District of Columbia	10	98	4	----	1	2	13	48	0	9
Nebraska	----	41	----	----	44	----	2	134	17	3

August 1935

	Cases
Hawaii Territory:	
Chicken pox	7
Leprosy	3
Mumps	32
Paratyphoid fever	1
Typhus fever	6
Undulant fever	2
Whooping cough	58
Puerto Rico:	
Chicken pox	23
Dysentery	22
Filariasis	5
Mumps	56
Ophthalmia neonatorum	6

August 1935—Continued

	Cases
Puerto Rico—Continued.	
Puerperal septicemia	12
Tetanus	10
Tetanus, infantile	7
Trachoma	4
Whooping cough	116

September 1935

Arizona:	
Chicken pox	4
Conjunctivitis	6
Dysentery (bacillary)	8
Epidemic encephalitis	2
German measles	8
Mumps	30
Trachoma	27

September 1935—Continued

	Cases
Arizona—Continued.	
Undulant fever	2
Whooping cough	11
Nevada:	
Chicken pox	3
Whooping cough	2

October 1935

District of Columbia:	
Chicken pox	42
Whooping cough	10
Nebraska:	
Chicken pox	17
Mumps	20
Undulant fever	1
Whooping cough	33

WEEKLY REPORTS FROM CITIES

City reports for week ended Oct. 26, 1935

This table summarizes the reports received weekly from a selected list of 140 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table. Weekly reports are received from about 700 cities, from which the data are tabulated and filed for reference.

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Maine:											
Portland	0	------	0	0	1	0	0	0	1	11	13
New Hampshire:											
Concord	0	------	0	0	0	1	0	0	0	0	13
Manchester	0	------	0	0	0	2	0	0	0	0	11
Nashua	0	------	--------	0	-------	1	0	-------	0	0	--------
Vermont:											
Barre	0	------	0	0	1	0	0	0	0	0	2
Burlington	0	------	0	0	0	0	0	0	0	0	4
Rutland	0	------	1	0	0	0	0	0	0	2	6
Massachusetts:											
Boston	2	------	1	6	24	24	0	10	1	13	239
Fall River	1	------	0	1	2	3	0	1	0	0	33
Springfield	0	------	0	0	0	1	0	1	0	12	28
Worcester	0	------	0	1	7	12	0	0	0	3	43
Rhode Island:											
Pawtucket	0	------	0	0	0	0	0	0	0	0	12
Providence	0	------	0	0	3	10	0	2	0	[1] 12	60
Connecticut:											
Bridgeport	2	------	0	0	1	1	0	0	1	2	23
Hartford	------	------	------	------	------	------	------	------	------	------	------
New Haven	0	------	0	1	3	6	0	0	0	5	33
New York:											
Buffalo	2	------	2	7	13	26	0	5	0	9	143
New York	24	7	2	38	117	57	0	69	3	112	1,339
Rochester	0	------	0	0	4	1	0	0	0	8	66
Syracuse	0	------	0	3	3	4	0	0	0	21	55
New Jersey:											
Camden	4	------	0	0	3	6	0	1	0	0	31
Newark	0	1	0	4	8	13	0	5	1	22	89
Trenton	0	------	1	1	0	4	0	3	0	3	38
Pennsylvania:											
Philadelphia	3	4	3	20	30	54	0	21	2	62	420
Pittsburgh	5	8	2	6	37	29	0	7	0	32	165
Reading	0	------	0	0	0	2	0	0	0	1	29
Scranton	0	------	--------	0	-------	2	0	-------	0	1	--------
Ohio:											
Cincinnati	9	------	1	1	8	16	0	5	0	1	127
Cleveland	14	16	0	4	12	17	0	9	0	24	174
Columbus	3	1	1	5	5	15	0	2	0	0	80
Toledo	1	1	1	1	4	8	0	4	0	15	75
Indiana:											
Anderson	0	------	0	0	1	2	0	0	0	0	10
Fort Wayne	4	------	0	0	1	4	0	0	0	0	26
Indianapolis	4	------	0	2	10	2	0	3	0	16	79
Muncie	1	------	0	5	0	3	0	0	0	0	5
South Bend	0	------	0	0	1	5	0	1	0	0	20
Terre Haute	0	------	0	0	0	2	0	0	0	0	24
Illinois:											
Alton	9	------	0	0	1	1	0	0	0	0	9
Chicago	12	3	3	9	51	105	0	31	2	69	659
Elgin	0	------	0	1	------	3	0	0	0	0	5
Moline	0	------	0	0	0	0	0	0	0	1	8
Springfield	0	------	0	1	4	6	0	0	0	1	22
Michigan:											
Detroit	1	3	3	2	21	22	0	14	1	109	237
Flint	1	------	0	1	2	13	0	2	0	0	25
Grand Rapids	0	------	0	0	1	3	0	0	1	2	35
Wisconsin:											
Kenosha	0	------	1	3	0	8	0	0	0	4	7
Milwaukee	0	------	0	1	3	23	0	2	0	62	97
Racine	0	------	0	1	1	25	0	1	0	15	16
Superior	1	------	0	0	1	2	0	0	0	3	4
Minnesota:											
Duluth	0	------	0	0	3	2	0	0	0	0	26
Minneapolis	6	------	2	1	6	58	0	0	0	4	81
St. Paul	0	------	0	0	8	21	0	3	0	6	61

[1]Delayed reports included.

City reports for week ended Oct. 26, 1935—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Iowa:											
Cedar Rapids	0		0	1	0	1	0	0	6	0	
Davenport	1			0		6	0		0	3	
Des Moines	9			1		9	0		0	0	23
Sioux City	0			1		5	0		0	0	
Waterloo	6			0		5	0		0	0	
Missouri:											
Kansas City	1		0	1	3	14	0	3	1	0	85
St. Joseph	1		0	0	4	1	0	0	0	1	24
St. Louis	20	1	0	0	6	43	0	7	3	1	178
North Dakota:											
Fargo	1		0	1	0	8	0	0	0	0	8
Grand Forks	0			0		0	0		0	0	
Minot	1		0	0	0	2	0	0	0	0	5
South Dakota:											
Aberdeen	0			0		0	0		0	0	
Nebraska:											
Omaha	13		1	0	1	16	0	1	0	0	40
Kansas:											
Lawrence	0		0	0	0	0	0	0	0	0	5
Topeka											
Wichita	0		0	0	0	2	0	1	2	2	27
Delaware:											
Wilmington	0		0	0	2	1	0	0	0	0	26
Maryland:											
Baltimore	2	5	0	2	15	15	0	14	1	12	186
Cumberland	0		0	0	0	4	0	0	0	0	11
Frederick	0		0	0	0	0	0	0	0	0	2
District of Col.:											
Washington	18	1	1	0	12	13	0	10	2	3	146
Virginia:											
Lynchburg	2		0	1	1	2	0	0	0	1	16
Norfolk	1		0	0	2	3	0	2	0	0	13
Richmond	1		1	1	4	2	0	1	0	0	61
Roanoke	4		0	0	1	2	0	0	0	0	17
West Virginia:											
Charleston	0	3	0	0	4	1	0	1	0	0	22
Huntington	2			0		9	0		0	0	
Wheeling	0		0	1	2	0	0	2	2	0	12
North Carolina:											
Gastonia	0	1	0	0	1	1	0	0	1	0	4
Raleigh											
Wilmington	0		0	0	0	0	0	0	0	4	9
Winston-Salem	1	1	1	0	0	8	0	0	2	0	9
South Carolina:											
Charleston	3		0	1	0	4	0	0	0	0	11
Columbia											
Florence	0		0	0	1	1	0	1	0	0	9
Greenville	1		0	1	0	1	0	0	0	0	13
Georgia:											
Atlanta	2	5	1	0	12	7	0	0	2	0	75
Brunswick	0		0	0	0	0	0	0	0	0	2
Savannah	11	1	0	1	1	3	0	0	1	0	23
Florida:											
Miami	4		0	1	3	0	0	1	0	0	25
Tampa	3		0	0	3	3	0	1	0	0	4
Kentucky:											
Ashland	8			0		5	0		0	1	
Covington	0		0	0	2	3	0	1	1	1	4
Lexington	4		0	1	2	3	0	2	2	2	19
Louisville	3	1	0	3	4	9	0	2	0	2	56
Tennessee:											
Knoxville	6		0	1	3	4	0	1	2	0	34
Memphis	4		0	0	5	2	0	4	0	5	62
Nashville	4		0	0	5	1	0	4	1	0	37
Alabama:											
Birmingham	3	4	0	1	8	3	0	1	1	0	69
Mobile	7		1	0	0	0	0	0	0	0	25
Montgomery	2			0		0	0		0	0	
Arkansas:											
Fort Smith	1			0		2	0		0	0	
Little Rock	1		0	0	3	3	0	1	0	0	5
Louisiana:											
Lake Charles	3		0	0	1	0	0	0	0	0	4
New Orleans	12	1	1	0	6	1	0	7	1	15	125
Shreveport	0		0	0	7	0	0	0	0	0	34

City reports for week ended Oct. 26, 1935—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Texas:											
Dallas	14	------	0	1	3	6	0	2	0	5	62
Fort Worth	17	------	0	0	4	7	0	6	1	0	37
Galveston	5	------	0	0	1	0	0	1	0	0	15
Houston	5	------	0	0	8	5	0	2	0	0	59
San Antonio	3	------	0	0	0	2	0	8	0	0	56
Montana:											
Billings	1	------	0	0	0	4	0	0	0	0	3
Great Falls	0	------	0	0	2	1	0	1	0	4	7
Missoula	0	------	0	0	1	14	0	0	0	0	3
Idaho:											
Boise	0	------	0	0	0	1	1	0	0	0	7
Colorado:											
Colorado Springs	0	------	0	0	0	8	0	1	0	2	10
Denver	12	------	0	2	9	17	0	3	0	0	93
Pueblo	0	------	0	0	0	27	0	0	1	0	2
New Mexico:											
Albuquerque	0	------	0	0	0	1	0	4	0	0	15
Utah:											
Salt Lake City	0	------	0	1	7	19	0	1	0	5	38
Nevada:											
Reno	0	------	0	0	1	3	0	0	0	0	4
Washington:											
Seattle	0	------	1	2	5	10	0	3	2	0	80
Spokane	0	1	1	0	0	2	2	0	0	0	40
Tacoma	0	------	0	1	4	0	0	0	0	0	28
Oregon:											
Portland	0	1	1	3	4	14	0	1	0	1	66
Salem	0	------	------	0	------	1	0	------	0	0	------
California:											
Los Angeles	21	13	0	10	11	30	0	15	1	8	305
Sacramento	8	------	0	1	1	7	0	3	0	0	30
San Francisco	0	3	1	10	6	20	0	6	0	12	130

State and city	Meningococcus meningitis		Poliomyelitis cases	State and city	Meningococcus meningitis		Poliomyelitis cases
	Cases	Deaths			Cases	Deaths	
Massachusetts:				Michigan:			
Boston	0	0	24	Detroit	1	0	5
Fall River	0	0	2	Minnesota:			
Springfield	0	0	1	Duluth	1	0	0
Worcester	0	0	2	St. Paul	1	0	0
Rhode Island:				Iowa:			
Providence	0	0	3	Waterloo	1	0	0
Connecticut:				Missouri:			
Bridgeport	0	0	1	St. Louis	1	0	2
New Haven	0	0	1	Maryland:			
New York:				Baltimore	0	1	1
New York	6	1	27	District of Columbia:			
Syracuse	0	0	2	Washington	4	0	3
New Jersey:				South Carolina:			
Newark	0	0	3	Charleston	1	0	0
Pennsylvania:				Kentucky:			
Philadelphia	3	0	8	Louisville	0	0	1
Pittsburgh	1	0	0	Louisiana:			
Ohio:				Shreveport	0	1	0
Cincinnati	1	2	0	Washington:			
Cleveland	2	1	0	Seattle	0	0	1
Indiana:				Oregon:			
Indianapolis	2	0	0	Portland	1	1	0
Illinois:				California:			
Elgin	0	0	1	Los Angeles	1	1	8
Springfield	0	0	1				

Epidemic encephalitis.—Cases: Newark, 1; San Francisco, 2.
Pellagra.—Cases: Washington, D. C., 1; Savannah, 1; Memphis, 1; New Orleans, 1; Los Angeles, 1; San Francisco, 1.
Typhus fever.—Savannah, 2.

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—2 weeks ended October 19, 1935.—During the 2 weeks ended October 19, 1935, cases of certain communicable diseases were reported by the Department of Pensions and National Health of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis				2			1	1		4
Chicken pox		12		163	377	83	44	61	70	810
Diphtheria		9	11	39	17	8	5		1	90
Dysentery				2	2					4
Erysipelas		3		9	5	3	1	1	2	24
Influenza		16	1		43				15	75
Lethargic encephalitis							1			1
Measles		4	47	194	550	45	218	44	178	1,280
Mumps		30			178	82	692	6	64	1,052
Paratyphoid fever	1	1			3	1			1	7
Pneumonia		5			12				5	22
Poliomyelitis					7	3	2	21	2	35
Scarlet fever	3	19	8	237	267	89	33	34	47	737
Trachoma									8	8
Tuberculosis	4	28	16	85	102	8	17	2	28	290
Typhoid fever	7	1	21	54	17	4	6		4	114
Undulant fever				1	1					2
Whooping cough	1	24	7	140	178	113	64	8	17	552

NOTE.—No report was received from Prince Edward Island for the week ended Oct. 19, 1935.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

NOTE.—A table giving current information of the world prevalence of quarantinable diseases appeared in the PUBLIC HEALTH REPORTS for October 25, 1935, pages 1512-1526. A similar cumulative table will appear in the PUBLIC HEALTH REPORTS to be issued November 29, 1935, and thereafter, at least for the time being, in the issue published on the last Friday of each month.

Cholera

Philippine Islands—Occidental Negros Province—Bago.—During the week ended August 31, 1935, 1 fatal case of cholera was reported at Bago, Occidental Negros Province, Philippine Islands.

Plague

Algeria—Philippeville.—During the week ended October 26, 1935, 3 cases of plague were reported at Philippeville, Algeria.

Smallpox

Argentina—Entre Rios Province—Parena—Raices Este.—According to a report dated October 18, 1935, smallpox has been reported at Raices Este, Parena, Entre Rios Province, Argentina. The usual precautions are being taken.

Typhus fever

Chile—Santiago.—A report dated October 29, 1935, states that there are 176 cases of typhus fever in Santiago, Chile, of which 11 are new cases; 5 deaths from typhus fever had occurred in the last 2 days.

Yellow fever

Colombia—Intendencia of Meta.—During the week ended September 28, 1935, 1 case of yellow fever was reported in the Intendencia of Meta, Colombia.